Remarks

Applicants have amended Claims 1 and 10 to clarify the invention.

In general, the present invention relates to filling capsules with a liquid. As discussed in detail in the introduction to the specification, there are particular problems relating to the release of excess pneumatic pressure when the capsule is provided with a liquid fill. Thus, the liquid inside the capsule is essentially incompressible, which means that gas trapped when the cap is fitted to the capsule body builds up a particularly high excess pressure. This excess pressure can be problematical, particularly when capsules formed of incompressible wall materials such as hydroxypropylmethyl cellulose (HPMC) are employed. HPMC is a material which has little elasticity or strength when wet so that any build up of pneumatic pressure within the capsule can cause bursting of the capsule during sealing. A further problem with liquid-filled capsules is that the liquid itself may impede the release of excess pressure, if the liquid is allowed to get drawn by capillary action between the capsule cap and the body.

The present invention alleviates these problems by providing a holding period in which the closed capsule is held in an upright orientation until the contents of the closed capsule have stabilised, and in particular until excess pneumatic pressure has been released. This holding time is now defined as being 5-300 seconds in the amended claims attached hereto.

It is important that the holding period occur before any attempt is made to seal the capsule cap to the capsule body. This is to provide a period of time to allow excess pneumatic pressure to escape for the capsule body. If, according to the prior art proposals, the holding period is after the cap is sealed to the body, then any excess pressure within the capsule is trapped inside the capsule and is not allowed to escape. Holding the capsule is the upright orientation prevents liquid from splashing around the inside of the capsule and becoming trapped between the cap and the body, where it would impede release of pneumatic pressure.

In the parent application, the Examiner has relied on US Patent No. 5,617,710 to Goossens ("Goossens") and US Patent No. 4,724,019 to Brown ("Brown"). Neither of these references disclose holding of the capsule and stabilisation of the liquid fill and release of

pneumatic pressure being completed prior to the application of sealing material to seal the capsule cap to the body.

Such a holding period is not a mere matter of design choice as posited by the Examiner. In a complex high-speed piece of machinery, the choice of the residence time has significant bearing on the constructions and cost of the equipment. One skilled in the art would not likely increase the residence time without good reason to do so, since it requires the construction of a stack of significant size in which the capsules are held during the holding period. For example, in the Applicant's equipment, there are between 20 and 40 capsules in the stack. The skilled artesian without possession of the present invention would have no motivation to adopt this additional feature.

Applicants submit that the present application is now in condition for allowance and the same is respectfully requested. Any questions that the Examiner may have regarding this correspondence can be directed to the undersigned who may be reached at (919) 854-1400.

Respectfully submitted,

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Clara R. Beard